PIRO Perspectives on PIFSC Stock Assessment Program

NOAA FISHERIES

PIFSC Stock Assessment External Review

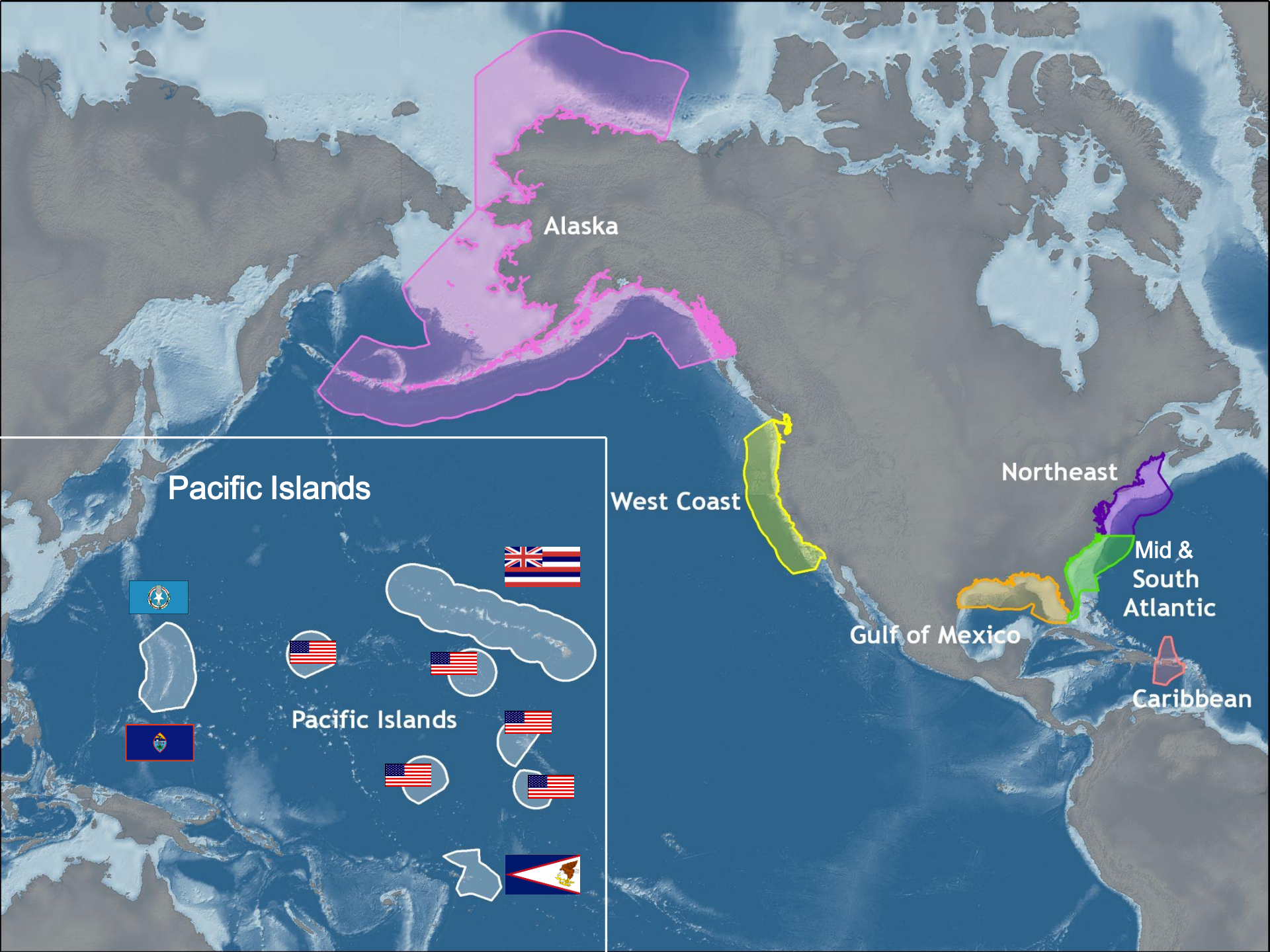
Honolulu, Hawaii

May 20, 2014

Pacific Islands Region

Presentation Outline

- Overview of PIRO and federally managed fisheries and stocks/stock complexes;
- Relevance of stock assessment conducted (what stocks are assessed?);
- Quality of stock assessments (modeling approach, review process, and communication); and
- Considerations for improvements.


Alaska
West Coast
Northeast
Mid &
South
Atlantic
Gulf of Mexico
Caribbean
Pacific Islands
Pacific Islands

Pacific Islands Regional Office

- **Domestic Fisheries.** Oversee implementation of fishery ecosystem plans (FEP) developed by the Council, as authorized under the Magnuson-Stevens Fishery Conservation and Management Act (MSA).
- **International Fisheries.** Provides policy advice and technical administrative support for international fisheries agreements in the western and central Pacific Ocean (WCPO).
- **Other Divisions/Programs:** Fisheries Observers, Habitat, Protected Resources, Monuments, Operations, Management Information & Technology

MSA Mandate (National Standard 1)

Prevent overfishing while achieving optimum yield

For each stock/stock complex, the FEP must include:

- An estimate of maximum sustainable yield (MSY);
- Status determination criteria that NMFS will use to determine when a stock or stock complex is subject to overfishing (MFMT or OFL), or overfished (MSST);
- Annual catch limits to prevent overfishing from occurring.

Ideally, MSY and MSY-based reference points above, should be estimated through a statistically-based stock assessment model.

Domestic Fisheries

Geographically-based Fishery Ecosystem Plans (FEP)

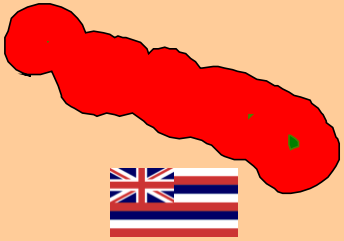
American Samoa Archipelago FEP

Bottomfish
Crustacean
Precious Coral
Coral Reef Ecosystem

Mariana Archipelago FEP

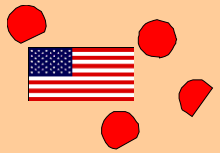
Bottomfish
Crustacean
Precious Coral
Coral Reef Ecosystem

Hawaii Archipelago FEP



Bottomfish
Crustacean
Precious Coral
Coral Reef Ecosystem

Pacific Remote Island Areas FEP

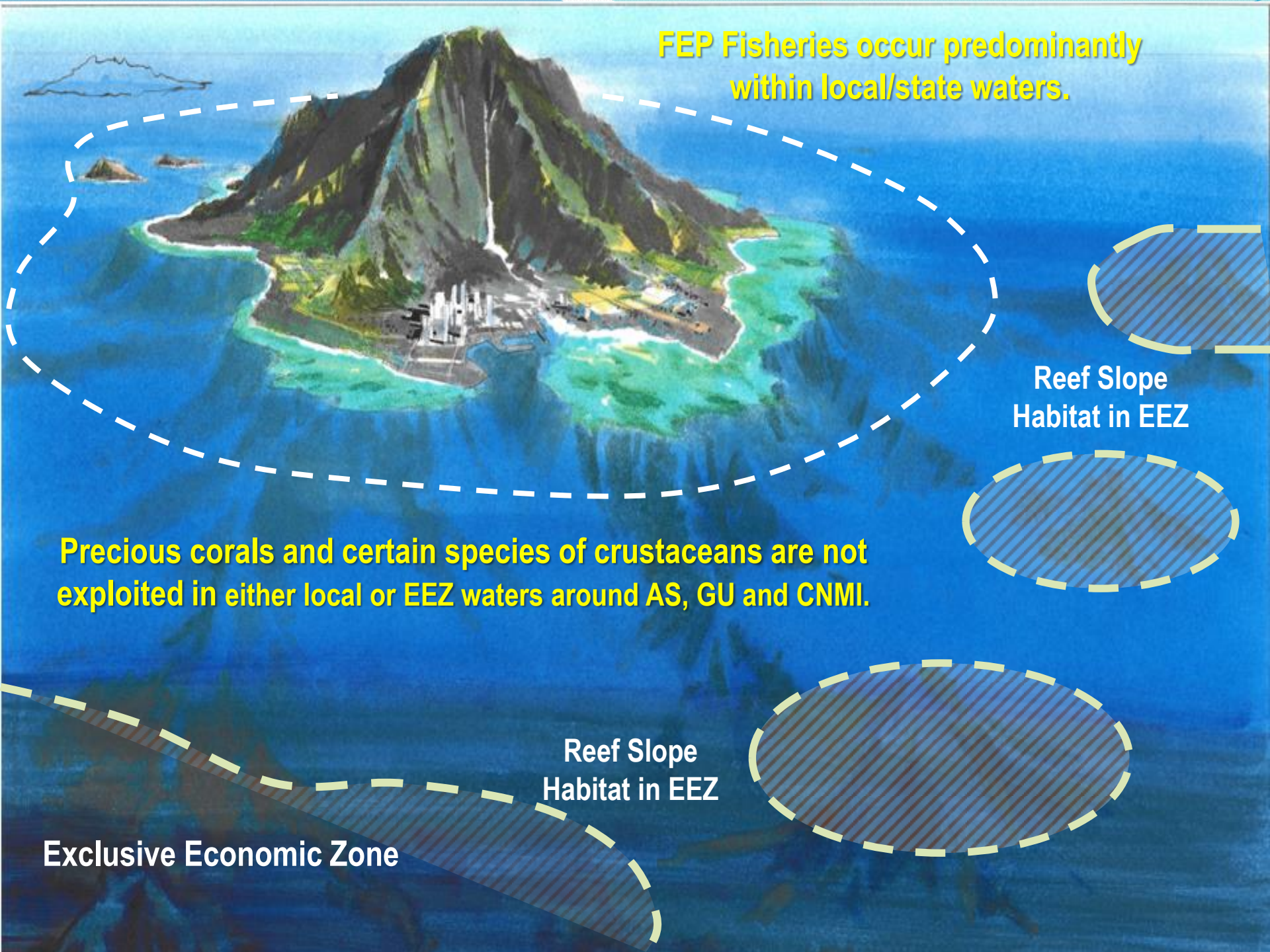


Bottomfish
Crustacean
Precious Coral
Coral Reef Ecosystem

There are several hundred individual species identified in each FEP.

Stocks & Stock Complexes by FEP (*n=103*)

FEP Fishery	American Samoa	Guam	CNMI	Hawaii
Bottomfish (snappers, groupers, jacks and emperors; Hawaii seamount groundfish	1	1	1	3
Crustaceans (spiny and slipper lobsters, Kona crab and deepwater shrimp)	4	4	4	4
Precious Coral (black & pink, gold, bamboo)	2	2	2	12
Coral Reef (several hundred species grouped at the family level)	15	20	15	13
TOTAL	***22***	***27***	***22***	***32***


FEP Fisheries occur predominantly within local/state waters.
Reef Slope Habitat in EEZ
Precious corals and certain species of crustaceans are not exploited in either local or EEZ waters around AS, GU and CNMI.
Reef Slope Habitat in EEZ
Exclusive Economic Zone

Major Domestic Stocks (FSSI)

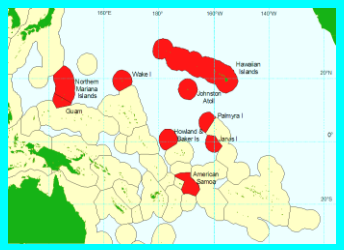
Only 7 of 103 stock complexes are considered major

1. American Samoa Bottomfish Complex
2. Guam Bottomfish Complex
3. CNMI Bottomfish Complex
4. Main Hawaiian Island Deep 7 bottomfish complex
5. Hawaii bigeye scad*
6. Hawaii round scad*
7. Hawaii Hancock Seamount Groundfish*

* Indicates un-assessed stocks

International Fisheries

Pacific Pelagic FEP



Pelagic Resources

Pacific bigeye tuna

N. Pacific swordfish

S. Pacific albacore

Stocks in International Fisheries (*n =36*)

Species Group	Number of Stocks/Populations
Tunas	**12** (albacore, bigeye, yellowfin, skipjack, bluefin, other)
Billfishes	8 (black, blue, striped, swordfish, sailfish, spearfish)
Sharks	8 (thresher, mako, silky, blue,)
Other pelagic finfish	5 (opah, ono, moonfish, oilfish, pomfret)
Squid	3 (diamond back, purple back, neon)
TOTAL	***36***

Major International Stocks (FSSI)

18 of 36 stocks are considered major

N. Pacific Albacore	E. Pacific striped marlin	Pacific blue marlin
S. Pacific Albacore	W. Pacific striped marlin	Pacific Kawakawa*
E. Pacific yellowfin tuna	N. Pacific Blue shark	Pacific Opah*
W. Pacific yellowfin tuna	N. Pacific swordfish	Pacific spearfish*
E. Pacific skipjack tuna	Pacific bluefin tuna	Pacific ono*
W. Pacific skipjack tuna	Pacific bigeye tuna	Pacific Mahimahi*

* Indicates un-assessed stocks

Relevance: Domestic Assessments

	Total	Assessed	Un-Assessed
Major Stocks	7	4	3
Minor Stocks	96	0	96

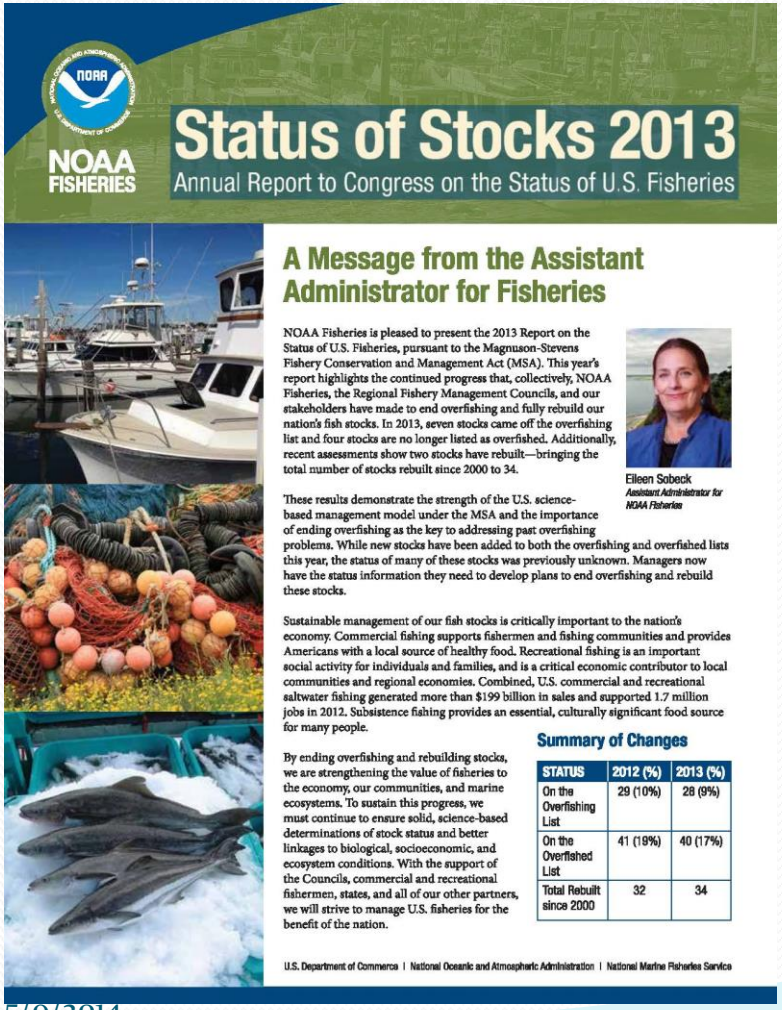
- Of the 3 un-assessed major domestic stocks, two occur primarily in local state waters (HI scads), the other is not fished by U.S. fleets (seamount groundfish).
- Of the 96 un-assessed minor stocks, fishing occurs predominantly in local state waters where data collection is voluntary (except in Hawaii).
- Council is considering classifying most of these stocks as ecosystem component species, which relives NMFS of requirements for stock assessments, MSY, ACL etc.

Relevance: International Assessments

	Total	Assessed	Un-Assessed
Major Stocks	**18**	**16**	**4**
Minor Stocks	**18**	**0**	**18**

- Completion of stock assessments for the 4 remaining major international stocks will require data from foreign fishing nations, which is currently not available, and not required to be reported to RFMOs.
- Completion of stock assessments for the 18 remaining un-assessed minor stocks, will require the same as un-assessed major stocks.

Stock Status Report to Congress



NOAA FISHERIES

Status of Stocks 2013

Annual Report to Congress on the Status of U.S. Fisheries

A Message from the Assistant Administrator for Fisheries

NOAA Fisheries is pleased to present the 2013 Report on the Status of U.S. Fisheries, pursuant to the Magnuson-Stevens Fishery Conservation and Management Act (MSA). This year's report highlights the continued progress that, collectively, NOAA Fisheries, the Regional Fishery Management Councils, and our stakeholders have made to end overfishing and fully rebuild our nation's fish stocks. In 2013, seven stocks came off the overfishing list and four stocks are no longer listed as overfished. Additionally, recent assessments show two stocks have rebuilt—bringing the total number of stocks rebuilt since 2000 to 34.

Eileen Sobeck
Assistant Administrator for NOAA Fisheries

These results demonstrate the strength of the U.S. science-based management model under the MSA and the importance of ending overfishing as the key to addressing past overfishing problems. While new stocks have been added to both the overfishing and overfished lists this year, the status of many of these stocks was previously unknown. Managers now have the status information they need to develop plans to end overfishing and rebuild these stocks.

Sustainable management of our fish stocks is critically important to the nation's economy. Commercial fishing supports fishermen and fishing communities and provides Americans with a local source of healthy food. Recreational fishing is an important social activity for individuals and families, and is a critical economic contributor to local communities and regional economies. Combined, U.S. commercial and recreational saltwater fishing generated more than $199 billion in sales and supported 1.7 million jobs in 2012. Subsistence fishing provides an essential, culturally significant food source for many people.

By ending overfishing and rebuilding stocks, we are strengthening the value of fisheries to the economy, our communities, and marine ecosystems. To sustain this progress, we must continue to ensure solid, science-based determinations of stock status and better linkages to biological, socioeconomic, and ecosystem conditions. With the support of the Councils, commercial and recreational fishermen, states, and all of our other partners, we will strive to manage U.S. fisheries for the benefit of the nation.

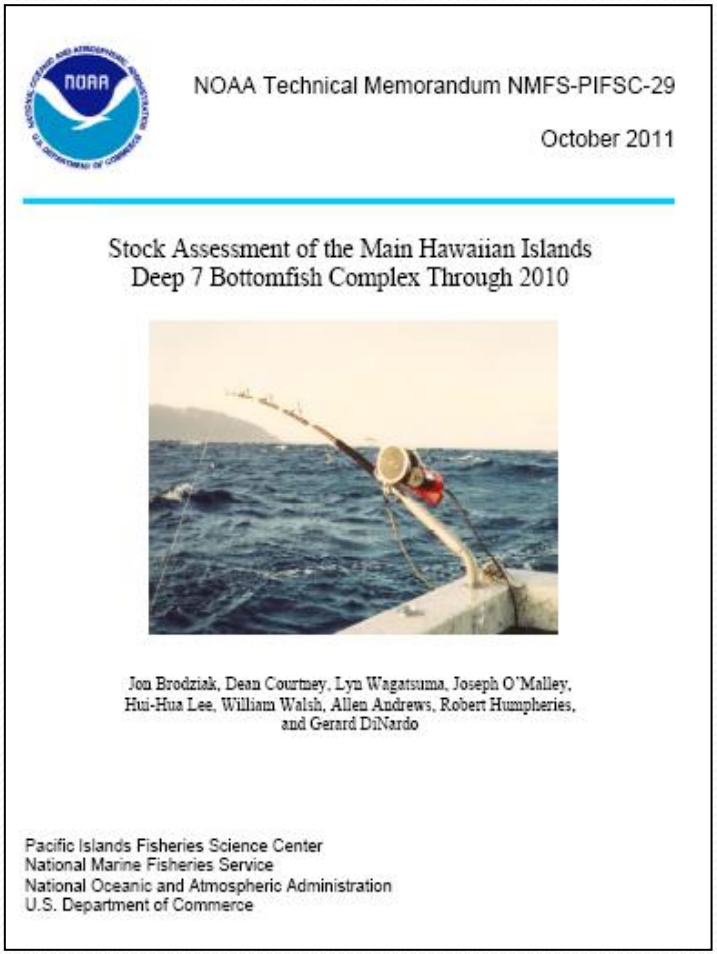
Summary of Changes

STATUS	2012 (%)	2013 (%)
On the Overfishing List	29 (10%)	28 (9%)
On the Overfished List	41 (19%)	40 (17%)
Total Rebuilt since 2000	32	34

U.S. Department of Commerce | National Oceanic and Atmospheric Administration | National Marine Fisheries Service

- NMFS must annually report stock status determination for all FEP stocks and stock complexes.
- NMFS relies on stock assessments to make these determinations.
- Status of majority of Pacific Islands stocks and stock complexes is "unknown."
- Ecosystem Component

Quality: Domestic Assessments



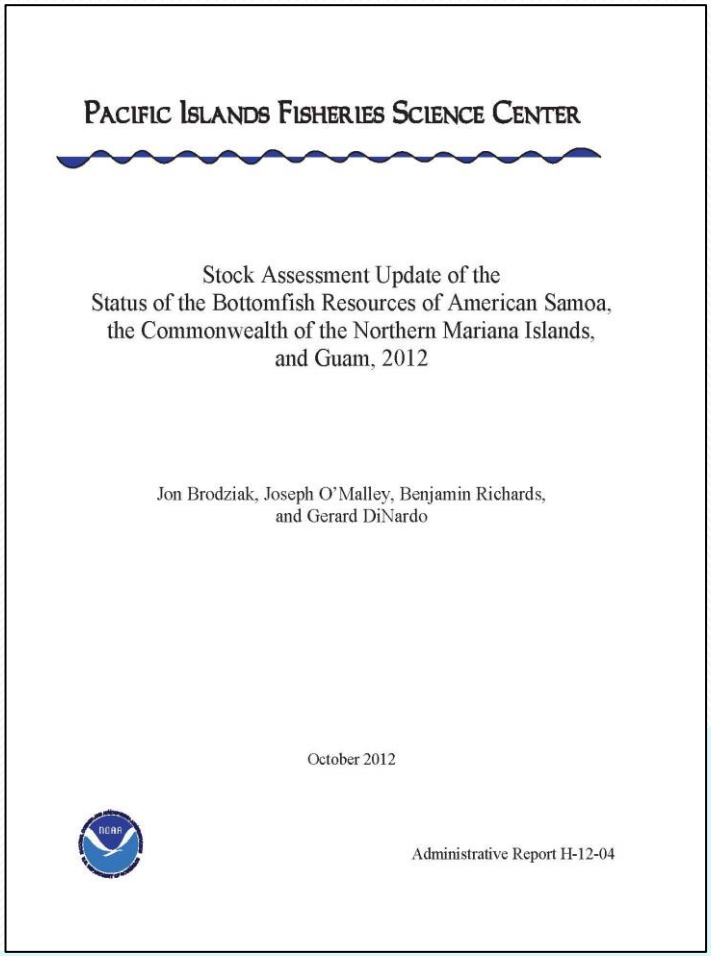
NOAA Technical Memorandum NMFS-PIFSC-29

October 2011

Stock Assessment of the Main Hawaiian Islands Deep 7 Bottomfish Complex Through 2010

Jon Brodziak, Dean Courtney, Lyn Wagatsuma, Joseph O'Malley, Hui-Hua Lee, William Walsh, Allen Andrews, Robert Humpheries, and Gerard DiNardo

Pacific Islands Fisheries Science Center
National Marine Fisheries Service
National Oceanic and Atmospheric Administration
U.S. Department of Commerce



PACIFIC ISLANDS FISHERIES SCIENCE CENTER

Stock Assessment Update of the Status of the Bottomfish Resources of American Samoa, the Commonwealth of the Northern Mariana Islands, and Guam, 2012

Jon Brodziak, Joseph O'Malley, Benjamin Richards, and Gerard DiNardo

October 2012

Administrative Report H-12-04

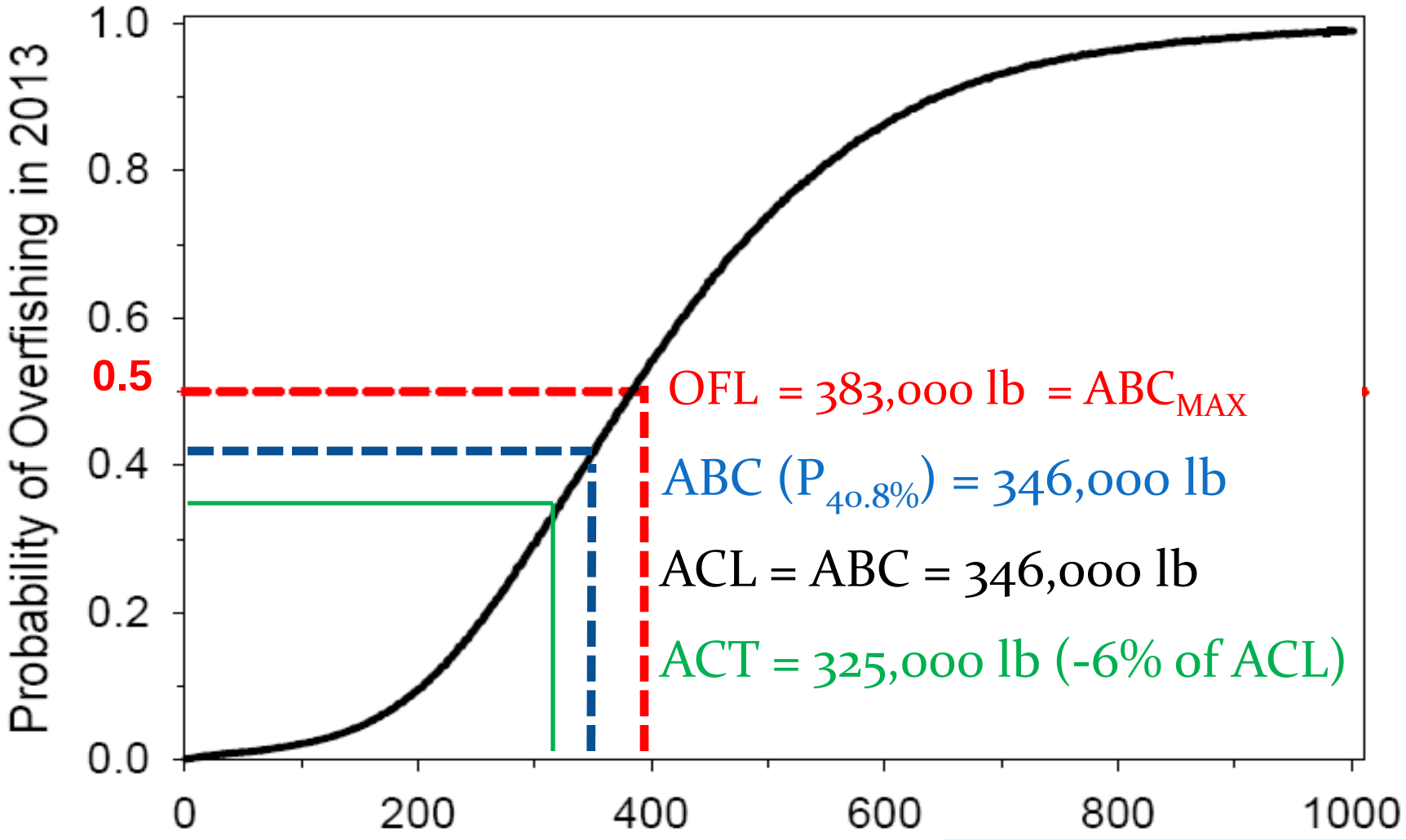
WPSAR Review Process

- **Tier 1:** Center for Independent Experts
  - New methodologies
  - International stock assessments
- **Tier 2:** WPSAR Expert Panel
  - New methodologies
  - Routine assessment updates
  - Coordinated by PIFSC/PIRO/Council
- Bottomfish stock assessments reviewed under Tier 2.

Stock assessment projection results showing the total commercial catches of Deep 7 bottomfish in fishing years 2012 and 2013 that would produce probabilities of overfishing of 0 – 99% under the Baseline Catch Scenario II and Baseline CPUE Scenario I

Catch (lb) of Deep 7 Bottomfish in 2012 & 2013	Probability of Overfishing Deep 7 Bottomfish in 2012	Probability of Overfishing Deep 7 Bottomfish in 2013
11	0	0
197,000	0.10	0.09
255,000	0.20	0.19
299,000	0.30	0.29
341,000	0.40	0.39
383,000	**0.50**	**0.50**
429,000	0.60	0.60
481,000	0.70	0.71
549,000	0.80	0.81
665,000	0.90	0.91
1,001,000	0.99	0.99

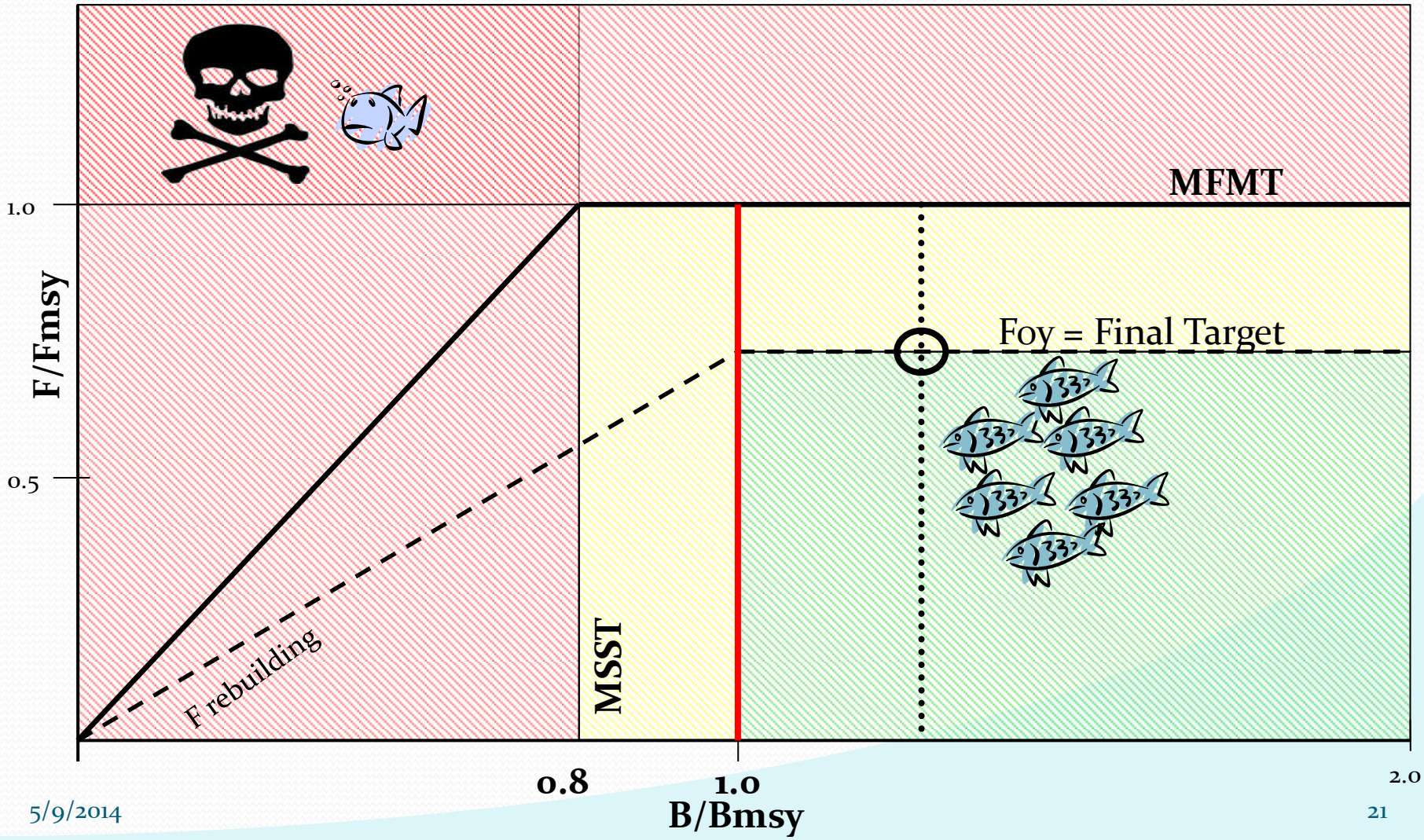
MHI Deep 7 Stock Assessment Model Projection



Quality: International Assessments

- Conducted by RFMOs and their respective science providers, with PIFSC scientist participation.
- RFMOs have not identified a reference points for MSST, so the default used is $B_{MSY.}$
- However, under the Pelagic FEP, MSST is *c* B_{MSY}, where *c* = 1.0-*M, or* 0.5, whichever is greater.

- To illustrate:
  - For species with *M* of 0.2, MSST is 0.8 B_{MSY}
  - For a species with *M* ≥ 0.5, the MSST is 0.5 $B_{MSY.}$



Summary

- PIFSC conducts stock assessments for the major federal fisheries tracked in the FSSI.
- For minor domestic stocks, which are harvested predominantly in state waters, lack of mandatory permit and reporting by local jurisdictions is a challenge to conducting assessments.
- PIFSC and Council are exploring other ad hoc methods to determine MSY and stock status for these.
- For both major and minor international stocks, lack of data from all foreign fishing nations continues to be a challenge.

Suggestions for Improvements

Coordination of the completion month of domestic assessment updates and any new assessments to allow for:

- Independent peer review process (if necessary);
- SSC to assess scientific uncertainty when setting ABC and for Council to set ACL;
- PIRO to complete necessary environmental impact analyses (e.g., EA) on ACL recommendation;
- PIRO to initiate rulemaking (proposed and final rules) prior to the start of the fishing year.

Example Timeline

- **2/2015:** PIFSC completes new assessment
- **4/2015:** Conduct CIE/WPSAR review
- **5/2015:** Council initiate P* analysis
- **6/2015:** SSC recommends ABC based on P*
- **6/2015:** Council recommends ACL
- **7/2015:** PIRO prepare EA
- **10/2015:** PIRO release EA and publish ACL proposed rule for public review and comment
- **12/2015:** PIRO publish ACL final rule
- **1/2016:** Start of fishing year


QUESTIONS?